

**REMARKS**

The Office Action mailed April 20, 2006, has been received and reviewed. Claims 1 through 188 are currently pending in the application, of which claims 1 through 74 and 179 through 186 are currently under examination. Claims 75 through 178 and 187 through 188 are withdrawn from consideration as being drawn to a non-elected invention, and have been canceled. Claims 1 through 37, 39 through 74 and 179 through 186 stand rejected. Claim 38 has been objected to as being dependent upon rejected base claims, but the indication of allowable subject matter in such claims is noted with appreciation. Applicants have amended claims 1, 11, 14, 26, 65, 69, 179, and 180, cancelled claim 10, and presented new claims 189 through 193, which substantially correspond to original claims 5, 53, 63, 65, and 73, respectively, each presented in independent form. Applicants respectfully request reconsideration of the application as presented herein.

**Substance of Applicant-Initiated Telephonic Interview**

On July 12, 2006, Ms. Doreen Neumann (who is employed by Applicants' Attorney as a paralegal) contacted Examiner Shane Bomar to request that consideration of U.S. Patent No. 6,620,308 to Gilbert be made of record in the present application, as such patent was used to reject claims 51 through 54 in the outstanding Office Action, but was not listed on a Form PTO-892 or Form PTO-1449. Examiner Bomar agreed to generate an additional Form 892 citing U.S. Patent No. 6,620,308 to Gilbert. There was no discussion between Ms. Neumann and Examiner Bomar regarding the patentability of any claims in the present application in view of U.S. Patent No. 6,620,308 to Gilbert.

**35 U.S.C. § 102(a) and § 102(b) Anticipation Rejections**

Anticipation Rejection Based on Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2).

Claims 1 through 4, 8 through 23, 27 through 29, 32 through 37, 39 through 44, 46 through 50, 57 through 60, 63, 64, 69 through 74 and 179 through 186 stand rejected under

35 U.S.C. § 102(a) as being anticipated by Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2). Applicants respectfully traverse this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Regarding independent claim 1, Applicants respectfully assert that independent claim 1 is not anticipated by either Paper No. 1 or Paper No. 2 under 35 U.S.C. § 102(a) because neither Paper No. 1 nor Paper No. 2 describes “a casing bit having an inner profile, ...at least a portion of the inner profile configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit,” as recited in independent claim 1.

The Examiner has asserted at Page 3 of the outstanding Office Action that “it is clear from Figure 2 in paper #1 that DS 2 has an inverted cone geometry,” and that, as a result, “when a subsequent DS 2 bit is used to drill through the first bit, the outer profile of the second DS 2 will correspond to the inner profile of the first DS 2. (A similar argument is made in relation to the DS 3 at Page 4 of the outstanding Office Action.) Applicants respectfully disagree. Applicants respectfully assert that the inner profile of the DS 2 is not described or illustrated in either Paper No. 1 or Paper No. 2. Furthermore, if the Examiner is asserting that, although the first DS 2 may not initially have an inner profile substantially corresponding to a drilling profile of a second DS 2, after the second DS 2 begins to wear through the first DS 2, an inner surface of the first DS 2 may be formed by the second DS 2 that has a profile substantially corresponding to a drilling profile of the second DS 2, Applicants respectfully assert that such an inner profile is not configured to substantially correspond to a drilling profile of another drilling tool for **subsequently** drilling through a portion of the casing bit. Furthermore, there is no evidence that such an inner profile of the first DS 2 would be formed if a second DS 2 is used to drill therethrough. For example, the central portion (radially inward portion) of the first DS 2 might be completely drilled through

by the second DS 2 before the outer portion (radially outward portion) of the drilling profile of the second DS 2 begins to drill through the first DS 2.

As neither Paper No. 1 nor Paper No. 2 describes each and every element set forth in claim 1, Applicants assert that claim 1 is not anticipated by either Paper No. 1 or Paper No. 2 and respectfully request that the Examiner withdraw the rejection of independent claim 1 under 35 U.S.C. § 102(a).

Applicants additionally assert that each of dependent claims 2-4, 8-23, 27-29, 32-37, 39-44, 46-50, 57-60, 63, 64, and 69-74 is allowable at least because each depends from claim 1, which is allowable. Therefore, Applicants assert that these claims are not anticipated by either Paper No. 1 or Paper No. 2 and respectfully request that the Examiner withdraw the rejection of these dependent claims under 35 U.S.C. § 102(a).

Regarding dependent claim 11, Applicants additionally assert that neither Paper No. 1 nor Paper No. 2 describes a casing bit “wherein at least a portion of the outer profile of the casing bit substantially corresponds to the drilling profile of the drilling tool,” as recited in dependent claim 11. Applicants note that a second DS 2 used to drill through a first DS 2, as asserted by the Examiner, would inherently have a size that is smaller than the first DS 2. As such, it is not inherently true that at least a portion of the outer profile of the first DS 2 would substantially correspond to the drilling profile of the second DS 2. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 11 under 35 U.S.C. § 102(a) for this additional reason.

Regarding dependent claim 18, Applicants additionally assert that neither Paper No. 1 nor Paper No. 2 describes a casing bit “wherein each of the plurality of cutting elements contains an amount of abrasive material,” “and wherein an average amount of the abrasive material contained by each of the cutting elements of the first portion is less than an average amount of the abrasive material contained by each of the plurality of cutting elements of the second portion,” as recited in dependent claim 18. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 18 under 35 U.S.C. § 102(a) for this additional reason.

Regarding dependent claim 23, Applicants additionally assert that neither Paper No. 1 nor Paper No. 2 describes a casing bit “wherein a majority of the first portion of cutting elements

comprises an abrasive...[that is] sized and configured to substantially wear away in response to drilling through a selected formation region,” as recited in dependent claim 23. In contrast, Paper No. 2 describes TSD cutters that are disposed in a supporting material that is worn away during drilling causing loss of cutting elements to occur. *Paper No. 2*, DrillShoe Tools Section, Second Paragraph. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 23 under 35 U.S.C. § 102(a) for this additional reason.

Regarding dependent claim 34, Applicants additionally assert that neither Paper No. 1 nor Paper No. 2 describes a casing bit “wherein each of the plurality of blades extends generally radially outward in a generally spiral fashion **from a central axis of the casing bit to the radial outer extent** thereof,” as recited in dependent claim 34. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 34 under 35 U.S.C. § 102(a) for this additional reason.

Regarding dependent claim 41, Applicants additionally assert that neither Paper No. 1 nor Paper No. 2 describes a casing bit “wherein at least a portion of [a] nozzle [or] a sleeve is configured to be removed in relation to an expected amount of erosion,” as recited in dependent claim 41. In contrast, Paper No. 2 describes maximizing erosion resistance of nozzles without effecting [sic] drillability. *Paper No. 2*, DrillShoe Tools Section, Fourth Paragraph. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 41 under 35 U.S.C. § 102(a) for this additional reason.

Regarding dependent claim 63, Applicants additionally assert that neither Paper No. 1 nor Paper No. 2 describes a casing bit “comprising at least one groove that is sized and configured to preferentially facilitate failure of at least a portion of the casing bit,” as recited in dependent claim 63. The Examiner has asserted at Page 5 of the outstanding Office Action that “close analysis of Figure 9 of [Paper No. 1] shows grooves in the back of the blades in a similar configuration as that of the Applicant.” Applicants respectfully disagree. Applicants note that it is not clear what feature the Examiner is asserting to be grooves in the back of a blades and cannot identify any such feature. Applicants can identify a region in the right-most blade in Figure 9 that appears darker than the surrounding region of the blade, but it is not clear that this feature is a groove, or that the feature is sized and configured to preferentially facilitate failure. Furthermore, a similar feature is not

visible on any of the other blades, and therefore it is unlikely that this feature is a groove that was sized and configured to preferentially facilitate failure. Furthermore, the blades shown in Figure 9 have been displaced. No grooves are visible in any of the blades shown prior to displacement, and therefore, it is possible that the feature on the rightmost blade in Figure 9 was actually caused by the displacement of the blade. There is no description set forth in Paper No. 1 and Paper No. 2 that describes the DS 1, DS 2, or DS 3, as including a groove as recited in dependent claim 63. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 63 under 35 U.S.C. § 102(a) for this additional reason.

Regarding dependent claim 64, Applicants additionally assert that claim 64 is allowable for the reasons discussed above in relation to dependent claim 63, from which claim 64 depends. Furthermore, neither Paper No. 1 nor Paper No. 2 describes a casing bit comprising “a plurality of grooves sized and configured to preferentially facilitate failure of at least a portion of the casing bit into sections,” as recited in dependent claim 64. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 64 under 35 U.S.C. § 102(a) for this additional reason.

Regarding dependent claims 69 and 70, Applicants additionally assert that neither Paper No. 1 nor Paper No. 2 describes a casing bit having “an outer shell and at least one inner core, the outer shell extending over substantially the entire nose portion of the casing bit,” as recited in dependent claim 69. The DS 1 and DS 2, as described in the Background Section of Paper No. 1, include “a central aluminum core” that is “housed inside a steel body.” Regarding the DS 3, Paper No. 1 describes the Inner Sleeve Assembly of the DS 3 as having an aluminum nose and a steel inner sleeve, which are screwed together to form the major part of the Inner Sleeve Assembly. As clearly shown in the Figures of Paper No. 1, the steel body of the DS 1 and DS 2 does not extend over substantially the entire portion of either the DS 1 or the DS 2. Similarly, the steel inner sleeve of the DS 3 does not extend over substantially the entire nose portion of the DS 3. The cited references do not describe, teach, or suggest that the steel body of the DS 1 and DS 2, or the steel inner sleeve of the DS 3, may be modified to extend over substantially the entire nose portion of the DS 1, DS 2, or DS 3. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 69 and 70 under 35 U.S.C. § 102(a) for this additional reason.

Regarding dependent claims 73, Applicants additionally assert that neither Paper No. 1 nor Paper No. 2 describes a casing bit having “at least one of an incendiary agent, an explosive agent, a reactive chemical, and an abrasive material,” “wherein the at least one of an incendiary agent, an explosive agent, a reactive chemical, and an abrasive material is configured to render the casing bit more drillable,” as recited in dependent claim 73. The second paragraph of the DrillShoe Tools Section of Paper No. 2 describes using Thermally Stable Diamond (TSD) disks for cutting structures on a casing bit. As described therein,

[w]hen engaging the formation, the cutting forces are directed through the [TSD disks] and to the supporting blades. Conversely when [sic] the tool is being drilled out after the casing is set in place, the cutting action of the subsequent drill bit or drill shoe, acts [sic] on the diamond elements from the unsupported direction, easily fracturing and dislodging the diamond cutting elements. The small diamond elements are easily flushed out with the fluid flow.

Applicants respectfully assert that, while the TSD disks described in Paper No. 2 comprise abrasive material, the TSD disks are not configured to **render the casing bit more drillable**. In contrast, they have been configured to not render the casing bit less drillable. In other words, the casing bit described in Paper No. 2 clearly is not more drillable for having included the TSD disks. It is simply alleged to not be less drillable for having included the TSD disks. As such, the TSD disks clearly are not configured to render the casing bit more drillable. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 73 under 35 U.S.C. § 102(a) for this additional reason.

Regarding independent claim 179, Applicants respectfully assert that independent claim 179 is not anticipated by either Paper No. 1 or Paper No. 2 under 35 U.S.C. § 102(a) because neither Paper No. 1 nor Paper No. 2 describes a casing bit that includes “a plurality of discrete cutting element retention structures disposed on [a] nose portion, wherein each discrete cutting element retention structure is configured to carry a **single** cutting element,” as recited in independent claim 179.

Paper No. 1 and Paper No. 2 each describe cutting elements that are carried by blades. The blades however, are configured to carry a plurality of cutting structures.

As neither Paper No. 1 nor Paper No. 2 describes each and every element set forth in claim 179, Applicants assert that claim 179 is not anticipated by either Paper No. 1 or Paper No. 2 and respectfully request that the Examiner withdraw the rejection of independent claim 179 under 35 U.S.C. § 102(a).

Regarding independent claim 180, Applicants respectfully assert that independent claim 179 is not anticipated by either Paper No. 1 or Paper No. 2 under 35 U.S.C. § 102(a) because neither Paper No. 1 nor Paper No. 2 describes a casing bit that includes “at least one gage section configured to define an outermost radius of the casing bit, ...[and] configured to extend longitudinally adjacent at least a portion of a casing section when the casing section is secured to the casing bit,” as recited in independent claim 180.

The DS 1 and DS 2 are described in the Background Section of Paper No. 1 as having “[a] raised section [that continues] along the body behind the cutter in spiral geometry to provide the gauge area. As clearly shown in Figures 1 and 2 of Paper No. 1, these raised sections are not configured to extend longitudinally adjacent at least a portion of a casing section when the casing section is secured to DS 1 or DS 2. The DS 3 is described in the Design Features Section of Paper No. 1 as having PDC Gauge trimmers incorporated on the blades to ensure that full gauge hole is maintained over the entire interval being drilled. As clearly seen in Figures 3, 4, 6, and 8, the blades of the DS 3 are not configured to extend longitudinally adjacent at least a portion of a casing section when the casing section is secured to the DS 3.

As neither Paper No. 1 nor Paper No. 2 describes each and every element set forth in claim 180, Applicants assert that claim 180 is not anticipated by either Paper No. 1 or Paper No. 2 and respectfully request that the Examiner withdraw the rejection of independent claim 180 under 35 U.S.C. § 102(a).

Applicants additionally assert that each of dependent claims 181-186 is allowable at least because each depends from claim 180, which is allowable. Therefore, Applicants assert that these claims are not anticipated by either Paper No. 1 or Paper No. 2 and respectfully request that the Examiner withdraw the rejection of these dependent claims under 35 U.S.C. § 102(a).

Anticipation Rejection Based on U.S. Patent No. 6,062,326 to Strong et al.

Claims 1, 2, 4 through 9 and 179 through 186 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Strong et al. (U.S. Patent No. 6,062,326). Applicants respectfully traverse this rejection, as hereinafter set forth.

Regarding independent claim 1, Applicants respectfully assert that independent claim 1 is not anticipated by Strong et al. under 35 U.S.C. § 102(b) because Strong et al. does not describe “a casing bit having an inner profile, ...at least a portion of the inner profile configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit,” as recited in independent claim 1.

Strong et al. describes, with reference to Figure 4, a casing bit 10 (casing shoe having cutters thereon) having an inner profile that is substantially flat (i.e., the interior surface of central portion 40 of drillable material.). *Strong et al.*, column 3, lines 37-53. Strong et al. does not describe, teach, or suggest that the inner profile of the casing bit 10 may be configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit. Strong et al. does describe additional variations of the casing bit 10 at column 5, lines 1-46. These variations of the casing bit 10, however, do not include an inner profile that substantially corresponds to a drilling profile of another drilling tool.

As Strong et al. does not describe each and every element set forth in claim 1, Applicants assert that claim 1 is not anticipated by Strong et al. and respectfully request that the Examiner withdraw the rejection of independent claim 1 under 35 U.S.C. § 102(b).

Applicants additionally assert that each of dependent claims 2 and 4-9 is allowable at least because each depends from claim 1, which is allowable. Therefore, Applicants assert that these claims are not anticipated by Strong et al. and respectfully request that the Examiner withdraw the rejection of these dependent claims under 35 U.S.C. § 102(b).

Regarding dependent claim 5, Applicants additionally assert that Strong et al. does not describe “[a] first plurality of cutting elements...configured to initially engage and drill through a selected region,” and “[a] second plurality of cutting elements configured to engage and drill through a **region to be subsequently encountered** by the casing bit,” as recited in dependent claim 5. Applicants respectfully assert that the wall regions of the borehole engaged by the



cutters 48 are not regions “subsequently encountered” by the casing bit, as the casing bit has already drilled through such regions by the cutters 44 or another drilling tool. The cutters 48 described by Strong et al. as primarily reaming a previously formed borehole. Strong et al., column 3, lines 58-61. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection of dependent claim 5 under 35 U.S.C. § 102(b) for this additional reason.

Regarding independent claim 179, Applicants respectfully assert that independent claim 179 is not anticipated by Strong et al. under 35 U.S.C. § 102(b) because Strong et al. does not describe a casing bit that includes “a plurality of discrete cutting element retention structures disposed on [a] nose portion, wherein each discrete cutting element retention structure is configured to carry a **single** cutting element,” as recited in independent claim 179.

Strong et al. describes, with reference to FIG. 3, polycrystalline diamond compact (PDC) elements 48 that are set into the lateral edges of linear flutes 42. The flutes 42 are configured to carry a plurality of cutting elements 48.

As Strong et al. does not describe each and every element set forth in claim 179, Applicants assert that claim 179 is not anticipated by Strong et al. and respectfully request that the Examiner withdraw the rejection of independent claim 179 under 35 U.S.C. § 102(b).

Regarding independent claim 180, Applicants respectfully assert that independent claim 180 is not anticipated by Strong et al. under 35 U.S.C. § 102(b) because Strong et al. does not describe a casing bit that includes “at least one gage section configured to define an outermost radius of the casing bit, ...[and] configured to extend longitudinally adjacent at least a portion of a casing section when the casing section is secured to the casing bit,” as recited in independent claim 180.

The casing bit described by Strong et al. includes a threaded box portion 34 at its tail end for connection to a casing string. *Strong et al.*, column 3, lines 40-42. The threaded box portion 34 is not, and does not include, a gage section configured to define an outermost radius of the casing bit 10.

As Strong et al. does not describe each and every element set forth in claim 180, Applicants assert that claim 180 is not anticipated by Strong et al. and respectfully request that the Examiner withdraw the rejection of independent claim 180 under 35 U.S.C. § 102(b).

Applicants additionally assert that each of dependent claims 181-186 is allowable at least because each depends from claim 180, which is allowable. Therefore, Applicants assert that these claims are not anticipated by Strong et al. and respectfully request that the Examiner withdraw the rejection of these dependent claims under 35 U.S.C. § 102(b).

### 35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Dykstra et al. (U.S. Patent No. 6,460,631)

Claims 24 through 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Dykstra et al. (U.S. Patent No. 6,460,631). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Each of claims 24 through 26 depends from independent claim 1 and includes the elements and limitations recited therein. Applicants respectfully assert that claims 24 through 26 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1 and Paper No. 2 in view of Dykstra et al. because the cited

references, when combined, do not teach or suggest “a casing bit having an inner profile, ...at least a portion of the inner profile configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit,” as recited in independent claim 1, as currently amended.

As previously discussed, neither Paper No. 1 nor Paper No. 2 describes a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool. Furthermore, such a drill bit is not taught or suggested by Paper No. 1 or Paper No. 2.

Dykstra et al. teaches a rotary drag bit that includes cutters and wear knots on the face thereof. The wear knots provide a bearing surface that augments depth of cut control (DOCC) of the cutters. *Dykstra et al.*, column 6, lines 21-33. Dykstra et al. does not describe, teach, or suggest a casing bit. Dykstra et al. does not describe, teach, or suggest an inner profile of a bit (either a conventional drill bit or a casing bit) that is configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through the bit.

As Paper No. 1, Paper No. 2, and Dykstra et al., when combined, do not teach or suggest all of the claim limitations of any one of claims 24 through 26, Applicants respectfully assert that claims 24 through 26 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1, Paper No. 2, and Dykstra et al., and request that the Examiner withdraw the rejection of dependent claims 24 through 26 under 35 U.S.C. § 103(a).

Obviousness Rejection Based on Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Radford et al. (U.S. Patent Publication No. 20050145417)

Claims 30 and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Radford et al. (U.S. Patent Publication No. 20050145417). Applicants respectfully traverse this rejection, as hereinafter set forth.

Each of claims 30 and 31 depends from independent claim 1 and includes the elements and limitations recited therein. Applicants respectfully assert that claims 30 and 31 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1 and Paper No. 2 in view of Radford et al. because the cited references, when combined, do not teach or suggest “a casing bit having an inner profile, ...at least a portion of the inner profile configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit,” as recited in independent claim 1, as currently amended.

As previously discussed, neither Paper No. 1 nor Paper No. 2 describes, teaches, or suggests a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool.

Radford et al. teaches expandable reamers, at least a portion of which may be coated with an adhesion resistant coating. *Radford et al.*, Page 18, Paragraph [160]. The adhesion resistant coating may inhibit adhesion of formation cuttings carried by a drilling fluid, and may include a polymer material. *Id.* Radford et al. does not describe, teach, or suggest an inner profile of a bit (either a conventional drill bit or a casing bit), at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through the bit.

As Paper No. 1, Paper No. 2, and Radford et al., when combined, do not teach or suggest all of the claim limitations of any one of claims 30 and 31, Applicants respectfully assert that claims 30 and 31 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1, Paper No. 2, and Radford et al., and request that the Examiner withdraw the rejection of dependent claims 30 and 31 under 35 U.S.C. § 103(a).

Obviousness Rejection Based on Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Huang et al. (U.S. Patent No. 6,439,326)

Claim 45 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Huang et al. (U.S. Patent No. 6,439,326). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 45 depends from independent claim 1 and includes the elements and limitations recited therein. Applicants respectfully assert that claim 45 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1 and Paper No. 2 in view of Huang et al. because the cited references, when combined, do not teach or suggest “a casing bit having an inner profile, ...at least a portion of the inner profile configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit,” as recited in independent claim 1, as currently amended.

As previously discussed, neither Paper No. 1 nor Paper No. 2 describes, teaches, or suggests a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool.

Huang et al. teaches, with reference to FIG. 2, a drill bit 2 that includes a roller cone 4 and fixed cutters 8. Huang et al., column 3, lines 40-41. Huang et al. does not describe, teach, or suggest an inner profile of a bit (either a conventional drill bit or a casing bit), at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through the bit.

As Paper No. 1, Paper No. 2, and Huang et al., when combined, do not teach or suggest all of the claim limitations of claim 45, Applicants respectfully assert that claim 45 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1, Paper No. 2, and Huang et al., and request that the Examiner withdraw the rejection of dependent claim 45 under 35 U.S.C. § 103(a).

Obviousness Rejection Based on Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Gilbert (U.S. Patent No. 6,620,308)

Claims 51 through 54 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Gilbert (U.S. Patent No. 6,620,308). Applicants respectfully traverse this rejection, as hereinafter set forth.

Each of claims 51 through 54 depends from independent claim 1 and includes the elements and limitations recited therein. Applicants respectfully assert that claims 51 through 54 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1 and Paper No. 2 in view of Gilbert because the cited references, when combined, do not teach or suggest “a casing bit having an inner profile, ...at least a portion of the inner profile configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit,” as recited in independent claim 1, as currently amended.

As previously discussed, neither Paper No. 1 nor Paper No. 2 describes a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool. Furthermore, such a drill bit is not taught or suggested by Paper No. 1 or Paper No. 2.

Gilbert teaches compositions for electrically disbonding materials. Gilbert does not describe, teach, or suggest an inner profile of a bit (either a conventional drill bit or a casing bit) that is configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through the bit.

As Paper No. 1, Paper No. 2, and Gilbert, when combined, do not teach or suggest all of the claim limitations of any one of claims 24 through 26, Applicants respectfully assert that claims 51 through 54 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1, Paper No. 2, and Gilbert, and request that the Examiner withdraw the rejection of dependent claims 51 through 54 under 35 U.S.C. § 103(a).

Applicants additionally assert that there is no motivation to combine the teachings of Gilbert with the teachings of either Paper No. 1 or Paper No. 2.

The mere fact that references can be combined does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. M.P.E.P. § 2143.01(III) (citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)). The cited prior art references do not suggest the desirability of using a temporary adhesive to attach cutters to a casing bit, or that drilling through a casing bit may be facilitated by removing the cutters from the face of the casing bit. In contrast, Paper No. 1 teaches displacing the entire blade structures on which the cutters are affixed into the annulus of the wellbore. Paper No. 2 teaches using drillable cutters on the casing bit radially within the drilling path of the subsequent bit, and using non-drillable cutters on the casing bit radially outside the drilling path of the subsequent bit. Applicants respectfully assert that the cited references do not suggest the desirability of the combination, and the suggestion to use any sort of temporary adhesive to affix cutters to a casing bit is found only in the application for the present invention.

In addition, the proposed combination of the prior art would change the principle of operation of any one of the DS 1, DS 2, and DS 3, as taught in Paper No. 1 and Paper No. 2, and as such, the teachings of the cited references are not sufficient to render the claims *prima facie* obvious. M.P.E.P. § 2413.02(VI). The principle of operation of the DS 1 and DS 2 is to use drillable cutters on the casing bit radially within the drilling path of the subsequent bit, and using non-drillable cutters on the casing bit radially outside the drilling path of the subsequent bit. The principle of operation of the DS 3 is to displace the entire blade structures on which the cutters are affixed into the annulus of the wellbore. Modifying the DS 1, DS 2, or the DS 3 so as to include electrically disbanding material as taught in Gilbert would significantly change these principles of facilitating drilling through a portion of the casing bits.

In view the above, there is no motivation to combine the teachings of Gilbert with the teachings of Paper No. 1 and Paper No. 2.

For each of the above reasons, Applicants respectfully assert that dependent claims 51 through 54 could not have been obvious to a person of ordinary skill in the art at the time the

invention was made considering Paper No. 1, Paper No. 2, and Gilbert, and request that the Examiner withdraw the rejection of dependent claims 51 through 54 under 35 U.S.C. § 103(a).

Obviousness Rejection Based on Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2)

Claims 55 and 56 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2). Applicants respectfully traverse this rejection, as hereinafter set forth.

Each of claims 55 and 56 depends from independent claim 1 and includes the elements and limitations recited therein. Applicants respectfully assert that claims 55 and 56 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1 and Paper No. 2 because the cited references, when combined, do not teach or suggest “a casing bit having an inner profile, ...at least a portion of the inner profile configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit,” as recited in independent claim 1, as currently amended.

As previously discussed, neither Paper No. 1 nor Paper No. 2 describes, teaches, or suggests a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool.

As Paper No. 1 and Paper No. 2, when combined, do not teach or suggest all of the claim limitations of any one of claims 55 and 56, Applicants respectfully assert that claims 55 and 56 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1 and Paper No. 2, and request that the Examiner withdraw the rejection of dependent claims 55 and 56 under 35 U.S.C. § 103(a).



Obviousness Rejection Based on Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Griffin (U.S. Patent No. 4,956,238)

Claims 61 through 62 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Griffin (U.S. Patent No. 4,956,238). Applicants respectfully traverse this rejection, as hereinafter set forth.

Each of claims 61 and 62 depends from independent claim 1 and includes the elements and limitations recited therein. Applicants respectfully assert that claims 61 and 62 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1 and Paper No. 2 in view of Griffin because the cited references, when combined, do not teach or suggest “a casing bit having an inner profile, ...at least a portion of the inner profile configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit,” as recited in independent claim 1, as currently amended.

As previously discussed, neither Paper No. 1 nor Paper No. 2 describes, teaches, or suggests a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool.

Griffin teaches alloys for bonding cutting elements to carbide carriers. Griffin, column 4, lines 40-44. In Table 1, Griffin teaches melt ranges for seven alloys, each of which ranges comprising temperatures lower than 1305° Fahrenheit. Griffin does not teach or suggest a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool.

As Paper No. 1, Paper No. 2, and Griffin, when combined, do not teach or suggest all of the claim limitations of any one of claims 61 and 62, Applicants respectfully assert that claims 61 and 62 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1, Paper No. 2, and Griffin, and request that the Examiner withdraw the rejection of dependent claims 61 and 62 under 35 U.S.C. § 103(a).

Obviousness Rejection Based on Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Sue et al. (U.S. Patent No. 6,063,502)

Claims 65 through 67 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Sue et al. (U.S. Patent No. 6,063,502). Applicants respectfully traverse this rejection, as hereinafter set forth.

Each of claims 65 through 67 depends from independent claim 1 and includes the elements and limitations recited therein. Applicants respectfully assert that claims 65 through 67 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1 and Paper No. 2 in view of Sue et al. because the cited references, when combined, do not teach or suggest “a casing bit having an inner profile, ...at least a portion of the inner profile configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit,” as recited in independent claim 1, as currently amended.

As previously discussed, neither Paper No. 1 nor Paper No. 2 describes, teaches, or suggests a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool.

Sue et al. teaches inserts for roller cone rock bits and percussion hammer bits, as well as shear cutters for drag bits, that include fibers of a hard phase material within a matrix material. *Sue et al.*, column 4, lines 45-50; Abstract of the Invention. Sue et al. does not teach or suggest a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool.

As Paper No. 1, Paper No. 2, and Sue et al., when combined, do not teach or suggest all of the claim limitations of any one of claims 65 through 67, Applicants respectfully assert that claims 65 through 67 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1, Paper No. 2, and Sue et al., and request that the Examiner withdraw the rejection of dependent claims 65 through 67 under 35 U.S.C. § 103(a).

Applicants additionally assert that the cited prior art references, when combined, do not teach or suggest a casing bit having a **nose portion** that “comprises one or more fibers disposed within a matrix material,” as recited in dependent claim 65, as currently amended. In contrast, Sue et al. merely teaches **inserts and cutters that may be attached to a nose portion** of a roller cone bit, a percussion bit, or a drag bit. Therefore, Applicants respectfully assert that dependent claims 65 through 67 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1, Paper No. 2, and Sue et al., and request that the Examiner withdraw the rejection of dependent claims 65 through 67 under 35 U.S.C. § 103(a) for this additional reason.

Furthermore, Applicants respectfully assert that there is no motivation to combine the teachings of Sue et al. with Paper No. 1 and Paper No. 2, and to modify the combined teachings in such as way as to provide a nose portion that includes one or more fibers disposed within a matrix material. Sue et al. teaches that the composite constructions disclosed therein “can be used [in various tools and applications] where the combined mechanical properties of high fracture toughness, wear resistance, and hardness are highly desired,” including “wear and cutting components in...drill and mining bits such as roller cone rock bits, percussion or hammer bits, diamond bits, and substrates for shear cutters.” *Sue et al.*, column 10, lines 55-59. Applicants respectfully assert that one of ordinary skill in the art would not be motivated to use the composite constructions taught by Sue et al. in a nose portion of a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit, since the combined mechanical properties of the composite constructions would hinder the subsequent drilling through a portion of the casing bit. As such, there is no motivation to combine and modify the teachings of Sue et al. with Paper No. 1 and Paper No. 2 in such as way as to provide a casing bit as recited in dependent claims 65 through 67, and Applicants request that the Examiner withdraw the rejection of these claims under 35 U.S.C. § 103(a) for this additional reason.

Obviousness Rejection Based on Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Giroux et al. (U.S. Patent Publication No. 20040245020)

Claim 68 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Paper No. WOCD-0306-05 to McKay et al. (Paper No. 1) and Paper No. WOCD-0306-02 to Galloway (Paper No. 2) in view of Giroux et al. (U.S. Patent Publication No. 20040245020). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 68 depends from independent claim 1 and includes the elements and limitations recited therein. Applicants respectfully assert that claim 68 could not have been obvious to a person of ordinary skill in the art at the time the invention was made considering Paper No. 1 and Paper No. 2 in view of Giroux et al. because the cited references, when combined, do not teach or suggest “a casing bit having an inner profile, ...at least a portion of the inner profile configured to substantially correspond to a drilling profile of another drilling tool for subsequently drilling through a portion of the casing bit,” as recited in independent claim 1, as currently amended.

As previously discussed, neither Paper No. 1 nor Paper No. 2 describes, teaches, or suggests a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool.

Giroux et al. teaches, with reference to FIGS. 33A-33D, drilling a wellbore 4102 using a bottom hole assembly (BHA) 4200 attached to casing 4104. *Giroux et al.*, Page 22, Paragraph [0225]. The BHA 4200 includes a drill bit 4204. *Id.* The BHA 4200 may further include a measurement-while-drilling (MWD) tool 4107, which “may also have sensors to monitor one or more downhole parameters, such as conditions within the wellbore...and/or geophysical parameters. *Giroux et al.*, Page 23, Paragraph [0238]. Giroux et al. does not teach or suggest a casing bit having an inner profile, at least a portion of which is configured to substantially correspond to a drilling profile of another drilling tool.

As Paper No. 1, Paper No. 2, and Giroux et al., when combined, do not teach or suggest all of the claim limitations of claim 68, Applicants respectfully assert that claim 68 could not have been obvious to a person of ordinary skill in the art at the time the invention was made

considering Paper No. 1, Paper No. 2, and Giroux et al., and request that the Examiner withdraw the rejection of dependent claim 68 under 35 U.S.C. § 103(a).

**Objections to Claim 38/Allowable Subject Matter**

Claim 38 stands objected to as being dependent upon rejected base claims, but are indicated to contain allowable subject matter and would be allowable if placed in appropriate independent form. Applicants note with appreciation the indication of allowable subject matter. Applicants, however, have amended independent claim 1 and assert that claim 38, as presented herein, depends from an allowable base claim. Applicants, therefore, respectfully request that the Examiner withdraw the objection to dependent claim 38.

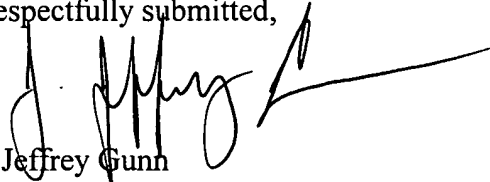
**New Claims 189 Through 193**

Applicants have presented new claims 189 through 193, which substantially correspond to original claims 5, 53, 63, 65, and 73, respectively, each presented in independent form. Applicants respectfully assert that each of claims 189 through 193 is allowable at least for the reasons discussed herein in relation to claims 5, 53, 63, 65, and 73, respectively, other than those reasons set forth with respect to the amendments to claim 1 presented herein, from which each of claims 5, 53, 63, 65, and 73 depends. Applicants note that examination of new claims 189 through 193 would not require an additional search, as these claims include subject matter previously searched in relation to original claims 5, 53, 63, 65, and 73.

**CONCLUSION**

Claims 1 through 9, 11 through 74, 179 through 186, and 189 through 193 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "J. Jeffrey Gunn", with a long horizontal flourish extending to the right.

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